

THE UNITED STATES PATENT AND TRADEMARK OFFICE

App. No. 10/733,533 Att'y Docket: EH-10965 (03-435)  
Filing Date: December 11, 2003 Conf No.: 7730  
Inventor(s): Blake C. Chenevert et al. Group Art Unit: 3749  
Assignee: United Technologies Corporation Examiner: Josiah C. Cocks  
Title: SOOT BLOWER ACCESS APPARATUS

Correspondence Address:  
Customer Number 34704

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313

**Appeal Brief under 37 CFR 41.37(c)(1)**

This Appeal Brief is submitted in support of the Notice of Appeal which was filed on November 11, 2005. A Request for Extension of Time accompanies this Brief to request extension of the period for filing the Appeal Brief to expire on February 11, 2006.

(i) ***Real party in interest*** - The real party in interest for this Appeal is the Assignee of Record, United Technologies Corporation.

(ii) ***Related appeals and interferences*** - There are no known related interferences and no other related appeals.

(iii) ***Status of claims*** - The claims are as listed in the amendment mailed October, 11, 2005 and as set forth in the accompanying Appendix. Claims 1-11 and 17 were canceled, claims 12-16 and 18-23 were rejected, claims 24 and 25 were objected to, and claims 26 and 27 were allowed.

(iv) ***Status of amendments*** - An amendment was filed October 11, 2005 and was acted upon by the examiner in an Advisory Action mailed October 28, 2005. It was indicated that the amendment will be entered for purposes of appeal and Applicants understand that to have been so entered.

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(v) ***Summary of claimed subject matter*** - The invention is drawn to a method for cleaning a surface (e.g., furnace tube bundles 70 of page 6, line 8 and FIG. 2 and other surfaces of page 1, line 6 et seq.) within a vessel (e.g., furnace 20 having a vessel wall 24 of page 5, lines 1-4 and FIG. 1 and other apparatus of page 1, line 6, et seq.). More particularly, as described below, the invention involves a method for coupling a combustion conduit (e.g., 26 of a soot blower 22 of page 3, line 8) to the vessel.

The vessel has the wall and an access conduit (146 of FIGS. 6 and 7; 202 of FIGS. 8 and 9; unnumbered in FIGS. 10 and 11; unnumbered in FIG. 12; 240 in FIG. 18; 304 in FIGS. 13-17). The access conduit is initially sealed by a first valve (142 of FIGS. 6 and 7; 208 of FIGS. 8 and 9; unnumbered in FIGS. 10 and 11; unnumbered in FIG. 12; unnumbered in FIG. 18; 302 in FIGS. 13-17 et seq.).

An insertion portion (end of 170 of FIGS. 6 and 7; unnumbered in FIGS. 8 and 9; 220 in FIGS. 10 and 11; 230 in FIG. 12; 242 in FIG. 18; 310 in FIG. 14 et seq.) of the combustion conduit is inserted (page 10, lines 26-28; page 11, line 17; page 13, line 4) into the access conduit. The combustion conduit has a second valve (178 of FIGS. 6 and 7; unnumbered in FIGS. 8 and 9; 222 in FIGS. 10 and 11; unnumbered in FIGS. 12 and 18; unnumbered but with body halves 314 and 316 in FIG. 17 and gate 318 in FIG. 15).

A seal is formed between the access conduit and the combustion conduit (page 10, line 30; page 13, line 5).

The first valve and second valve are opened (page 10, 2 lines from end to page 11, line 5; page 11, lines 15-20 and 30 and 31; page 13, lines 8, 9, and 24).

Combustion gases are passed through the combustion conduit into the vessel (page 8, lines 28-31).

The insertion portion is withdrawn from the access conduit (page 10, final two lines; page 11, line 5; page 11, lines 20 and 21; page 13, lines 25 and 26).

**(vi) *Grounds of rejection to be reviewed on appeal -***

There is one (1) ground of rejection to be reviewed on appeal as follows:

Ground 1 – The rejection of claims 12-16 and 18-23 under 35 U.S.C. 103(a) as being obvious and unpatentable over US Patent No. 5,277,153 of Kakabaker in view of US Patent No. 4,333,742 of Tanca and JP 2003-269887.

**(vii) *Argument -***

**Ground 1 – Claims 12-16 and 18-23 are patentable over the art of record.**

**(a) Introduction**

The rejection is a mere hindsight reconstruction of apparatus elements of the rejected independent claim with substantial unsuggested reconfiguration. No proper motivation has been provided for the proposed combination of apparatus elements. Moreover, there is no citation or motivation for the claimed method elements or for apparatus and method elements of various dependent claims.

**(b) The Basic Combination of References**

Kakabaker was asserted as including "a valve (16) that is opened to release superheated steam into the vessel... [and] considered to be the second valve recited in" claim 12. Advisory Action, page 3, paragraph 2. Appellants note that the Kakabaker valve 16 is at the upstream end of a steam supply pipe. See FIG. 1 and col. 3, lines 36-38. FIGS. 1 and 2 of Kakabaker are attached as Evidence Exhibits 1A and 1B.

The Japanese patent was asserted as showing "a retractable soot blower in the same field of endeavor as Kakabaker." Advisory Action, page 3, paragraph 3. The Advisory Action identified element 3 as being "an insertion latching valve" as identified in a computer translation of the Japanese patent. Alternatively, element 35 (identified as a "masking door") was asserted as being the claimed first valve. FIGS. 1 and 2 of the Japanese patent are attached as Evidence Exhibit 2. As is seen in the attached exhibits, Kakabaker and the Japanese patent are both fairly complex differently-structured devices. There is no showing of why one of ordinary skill in the art would attempt to have adopted a feature from one to the other, let alone how.

Tanca was asserted as employing "combustion fuel gases for cleaning..." Advisory Action, page 4, paragraph 4. It was asserted that it would have been obvious to modify the step of using superheated steam "to incorporate the step of using either combustion fuel gases or

combustion product/flue gases... as such gases are understood in the art to be satisfactory in dislodging built-up residue..." Advisory Action, page 5, first paragraph. FIGS. 1 and 2 of Tanca are attached as Evidence Exhibit C.

The grounds of rejection are insufficient for several reasons. Kakabaker's valve 16 is a valve coupled to a steam supply pipe. Col. 3, line 39. Such a valve is necessary to admit the steam "only when a soot blowing operation is initiated." Col. 3, lines 43-44. This valve 16 is presumably required to avoid a constant flow of steam from the source. The function of this valve is, thus, to hold back the steam. This does not properly transfer to the hypothetical combustion-operated device wherein, the valve 16 would become a valve that holds back combustion gases. There is no suggestion for such a valve.

Clearly, in the combination, Kakabaker's valve 16 would be replaced by whatever valve(s) of Tanca admit the fuel to the conduit. Such a valve would be located upstream not downstream of the location of combustion. Interestingly, the Advisory action asserted that "the valve of Kakabaker would continue to function as stated in Kakabaker in supplying a fluid for cleaning a vessel." Page 6, lines 4-5. No clarification was made as to whether this hypothetical "fluid" was the fuel, the oxidizer, a mixture, or combustion gases. However, at page 7, second paragraph, it was asserted to be the combustion gases. Presumably, one would also retain the fuel and oxidizer valves of Tanca (or of any of a number of prior art combustive cleaning apparatus). There is no teaching of why one of ordinary skill in the art would add yet another valve.

The effects of valve positional considerations relative to specific elements of the present claims are discussed below. Nevertheless, these considerations also further argue against the propriety of the proposed combination.

(c) The Valve Position of Claim 12

Claim 12 (see former claim 17) identifies the combustion gases as passing through the second valve. Thus, combustion initiates upstream of the second valve. Thus claim 12 would distinguish its second valve from any valve introducing the fuel and/or oxidizer to the conduit. As noted above, the fuel and/or oxidizer valves are the only reasonable second valves suggested by the three reference combination. One would not locate a valve further downstream. If the position of the Kakabaker valve is preserved, the combustion gases would not pass through it.

Dependent claims 13-16 and 18-23 all depend directly or indirectly from independent claim 12 and are submitted to be patentable based upon this dependency. In addition, each of these claims is submitted to contain patentable subject matter in its own right.

(d) The Valves of Claim 16

There is no suggestion in the references for use of the particular valves in the context of the method of claim 12. Only, if the references more closely suggested the claimed underlying methods, would considerations of optimization and selection come into play.

(e) The Valve Position of Claim 18

Claim 18 further identifies the second valve as between a main portion of the conduit and the insertion portion of the conduit. There is no suggestion in the references for this relatively downstream location.

(f) The Valve Position of Claim 22

Claim 22 identifies causing a deflagration-to-detonation transition upstream of the second valve. There is no suggestion in the references for this location.

(g) The Various Valve Opening and/or Closing Times of Claims 13, 19, 20, and 21

In the second paragraph of page 4 of the Advisory Action, it was asserted generally "that the valves would be opened and closed as necessary..." and that one of ordinary skill "would select appropriate valve opening times through routine experimentation..." The Advisory Action cited MPEP 2144.05(II)(A). However, the cited paragraph identifies optimization within prior art conditions and discusses, for example, optimization of a single quantitative parameter (e.g., concentration or temperature) within a prior art range. Clearly, time would be such a range. However, the claimed timing is not a mere question of optimizing a time (i.e., a duration) but of selecting an order. Thus, there is no suggestion for the timing of claims 13, 19, 20, and 21.

Claim 13 identifies opening the first valve during an intermediate stage of insertion. There is no suggestion to use the cited Japanese patent valve in this way.

Claims 19-21 identify aspects of introducing a fuel air charge with the second valve open and then initiating combustion. As noted above, even the hypothetical combination would turn the second valve into one that holds back combustion gases and whose use would not satisfy these method steps.

(h) The Sealing of Claim 12 and its Timing of Claim 15

The Office action appears to identify the claimed seal as being satisfied by the Kakabaker "seal-bearing arrangement (41)". Office action, page 4, paragraph 2. Said element, however, is identified as containing "rod-type seal assemblies 58 and 59..." Col. 5, line 32. There is no indication how these can be the claimed "seal between the combustion conduit and the access conduit" where the access conduit is the conduit initially sealed by the first valve which the Office action asserts is inherent in Kakabaker. As defined in the Office action, this element is merely internal to the asserted combustion conduit and would not serve the claimed function. There is furthermore no suggestion for the timing of the sealing identified in claim 15.

It has been realized that claim 14 does not further limit claim 12. This will be corrected upon remand.

(i) The Conduit Assembly Steps of Claim 23

Claim 23 identifies particular insertion and conduit assembly steps involving assembling conduit sections upstream of the second valve. There is no suggestion in the references for these. Clearly, the lance like configuration of the primary reference with the asserted second valve at an upstream end of the lance precludes this. The Advisory Action identified Kakabaker element 15. Page 7, third paragraph. However that is a "support frame" and not a conduit section. Col. 3, line 47.

**Conclusion**

Each of the claims as set forth above clearly contains allowable subject matter. It is respectfully submitted that these rejections are in error.

Reversal of the rejection of these claims is therefore earnestly solicited.

(viii) ***Claims appendix*** - Attached is a Claims appendix containing all claims in the application and which form the basis for this appeal.

(ix) ***Evidence appendix*** - Attached is an Evidence appendix showing relevant drawing figures of the cited references.

(x) ***Related proceedings appendix*** - None.

Applicants request that the fee for filing this Appeal Brief be charged to Deposit Account No. 21-0279. Please charge any deficiencies or additional fees which may be required hereunder and credit any overpayments to Deposit Account No. 21-0279.

Respectfully submitted,

By 

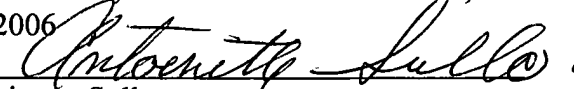
William B. Slate  
Attorney for Applicants  
Reg. No.: 37,238

Telephone: 203-777-6628  
Telefax: 203-865-0297

Date: February 13, 2006

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Antoinette Sullo

## **Claims Appendix**

### **Listing of Claims:**

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Canceled)
11. (Canceled)



12. A method for cleaning a vessel, the vessel having a wall and an access conduit initially sealed by a first valve, the method comprising:

inserting an insertion portion of a combustion conduit into the access conduit, the combustion conduit having a second valve;

forming a seal between the access conduit and the combustion conduit;

opening the first valve;

opening the second valve;

passing combustion gasses through the combustion conduit and second valve into the vessel; and

withdrawing the insertion portion from the access conduit.

13. The method of claim 12 wherein:

the opening of the first valve occurs during an intermediate stage of said insertion.

14. The method of claim 12 further comprising:

forming a seal between the combustion conduit and the access conduit.

15. The method of claim 14 wherein:

the forming of the seal occurs before the opening of the first valve.

16. The method of claim 12 wherein:

the opening of one of the first and second valves comprises a pivotal movement of a gate of said one valve; and

the opening of the other valve is manual.

17. (Canceled)

18. The method of claim 12 wherein:

the second valve is between a main portion of the combustion conduit and said insertion portion.

19. The method of claim 12 further comprising:

with the second valve open, introducing a fuel/oxidizer charge to the combustion conduit upstream of the second valve.

20. The method of claim 19 wherein:

said fuel/oxidizer charge comprises a fuel and an oxidizer mixed at or subsequent to introduction to the combustion conduit.

21. The method of claim 12 further comprising:

with the second valve open, initiating combustion of a fuel/oxidizer charge in the combustion conduit.

22. The method of claim 12 further comprising:

causing a deflagration-to-detonation transition upstream of the second valve.

23. The method of claim 12 wherein:

the second valve is formed at an upstream end of the insertion portion and, after the insertion, one or more upstream conduit sections are installed to the insertion portion.

24. The method of claim 23 wherein:

a sliding gate of the second valve is initially secured to a downstream body half of the second valve positioned to block the insertion portion during the insertion;

after the insertion, an upstream body half of the second valve is secured to the downstream body half; and

the gate is freed to allow said opening of the second valve.

25. The method of claim 24 wherein the insertion is accomplished by tightening nuts on threaded rods extending from the downstream body half.

26. A method for cleaning a vessel, the vessel having a wall and an access conduit initially sealed by a first valve, the method comprising:

inserting an insertion portion of a combustion conduit into the access conduit, the combustion conduit having a second valve;

forming a seal between the access conduit and the combustion conduit;

opening the first valve;

opening the second valve;

passing combustion gasses through the combustion conduit into the vessel; and  
withdrawing the insertion portion from the access conduit

wherein:

the second valve is formed at an upstream end of the insertion portion and, after the  
insertion, one or more upstream conduit sections are installed to the insertion portion;

a sliding gate of the second valve is initially secured to a downstream body half of the  
second valve positioned to block the insertion portion during the insertion;

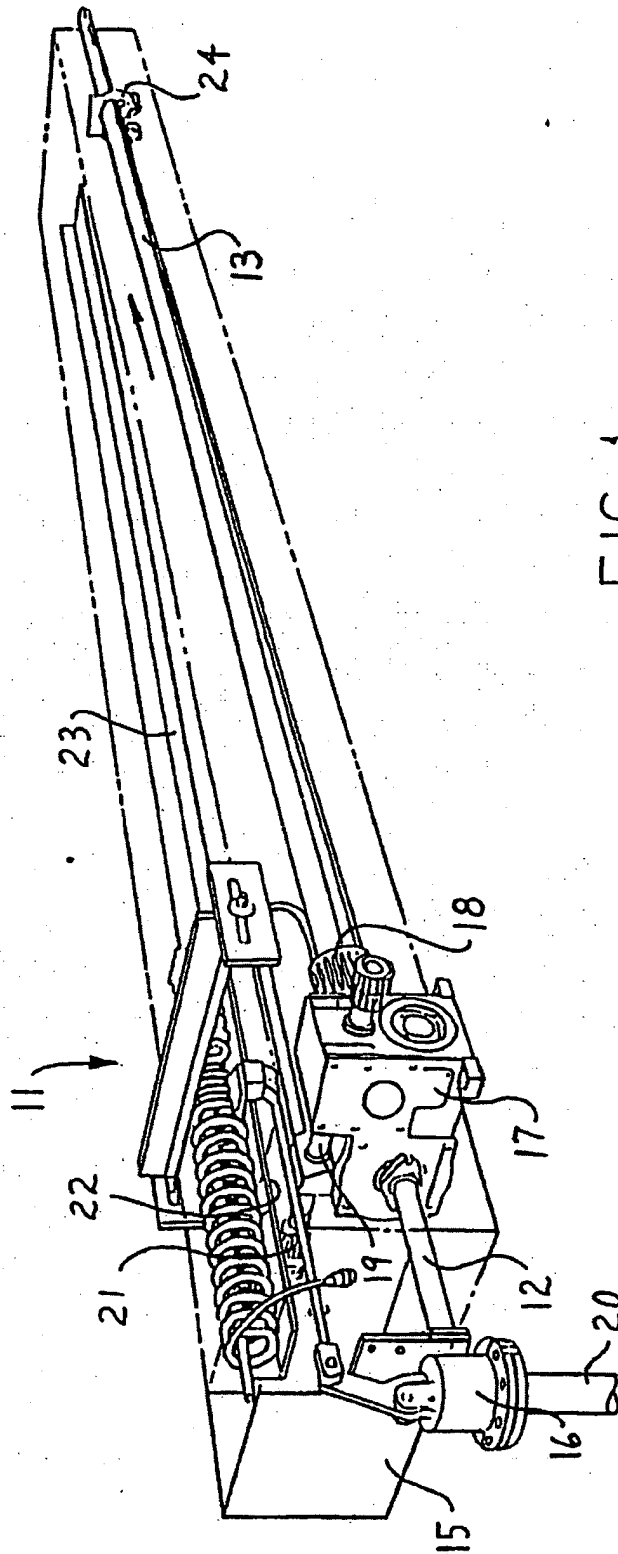
after the insertion, an upstream body half of the second valve is secured to the  
downstream body half; and

the gate is freed to allow said opening of the second valve.

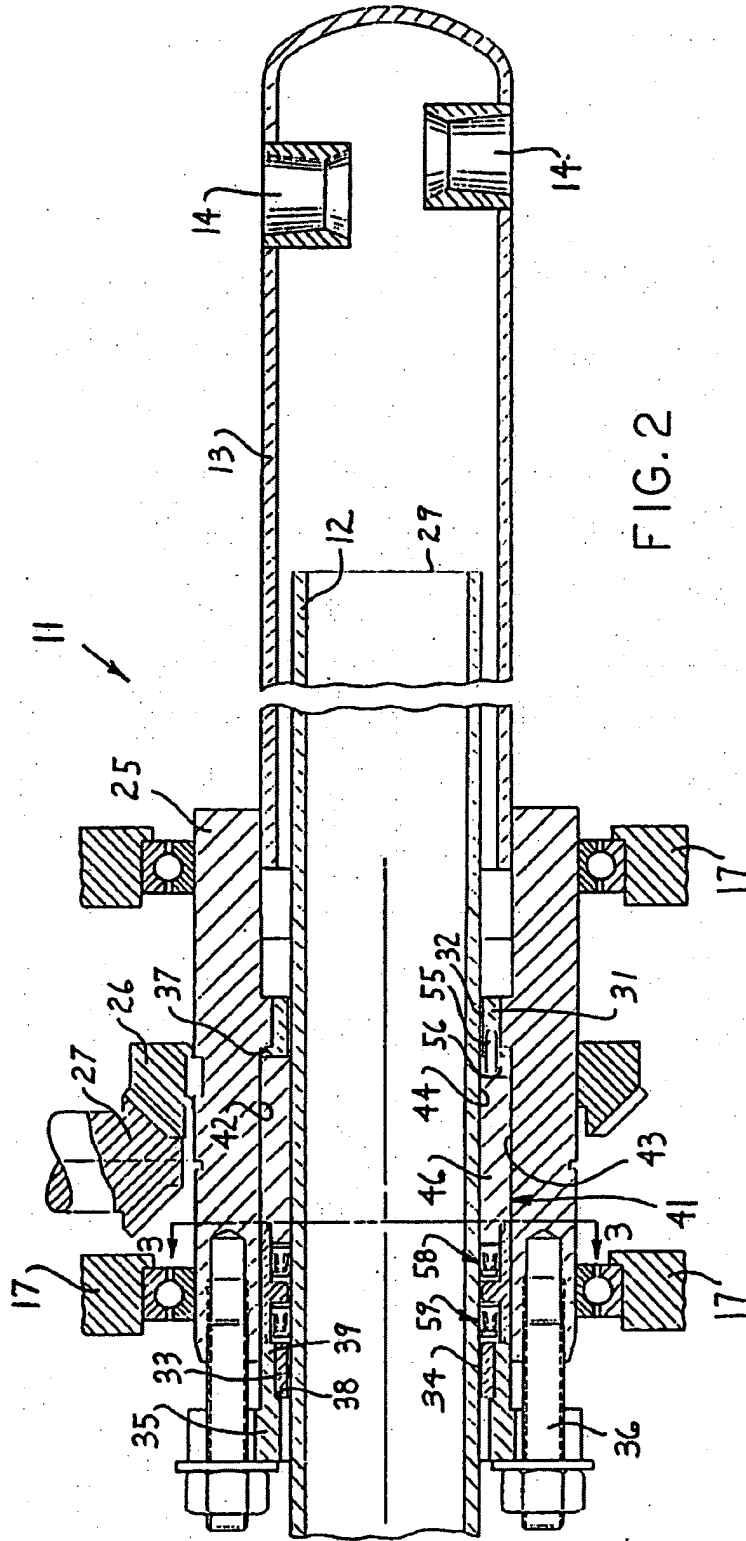
27. The method of claim 26 wherein the insertion is accomplished by tightening nuts on  
threaded rods extending from the downstream body half.

Evidence Appendix

Ex. 1A

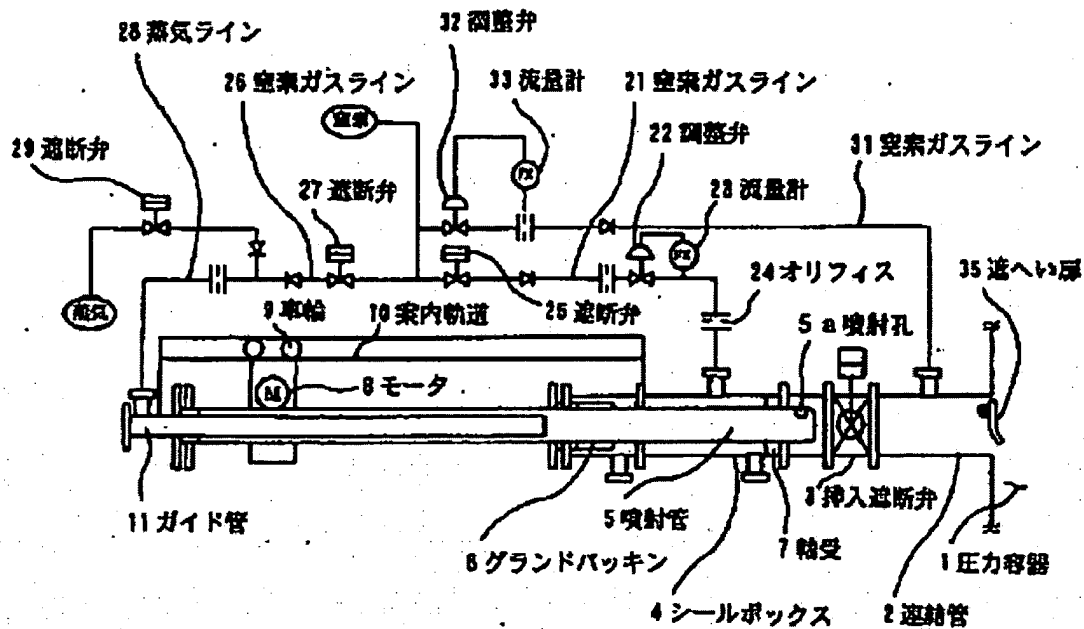


Ex. 1B

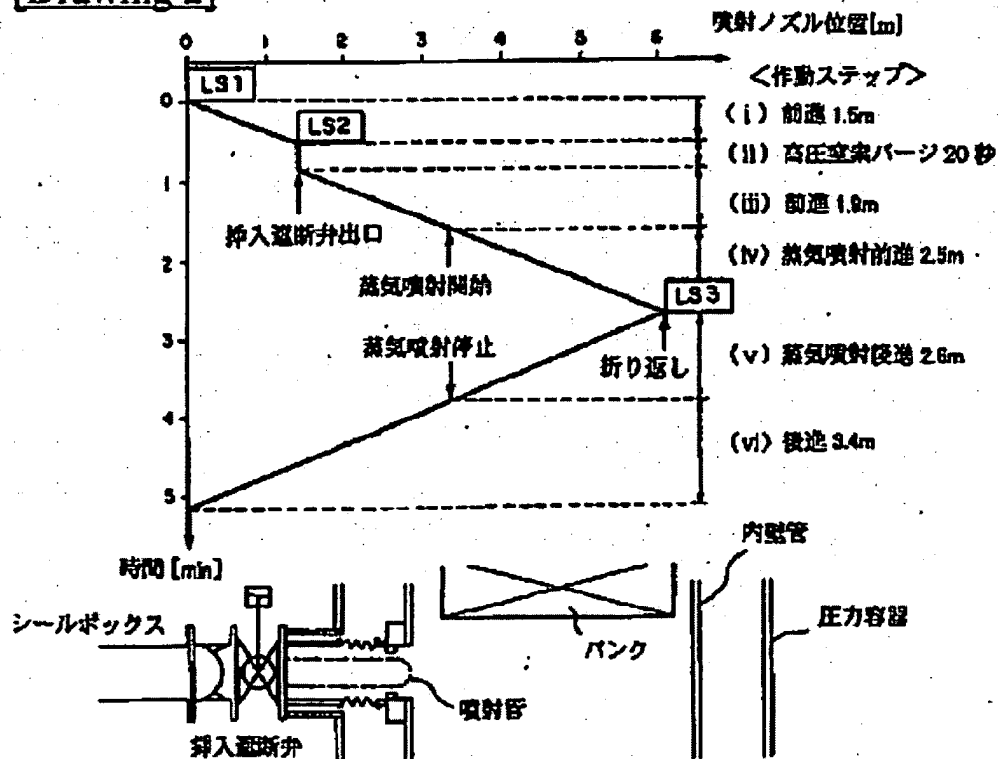


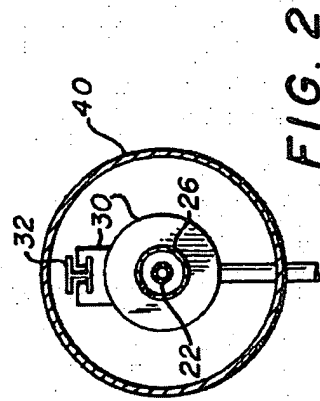
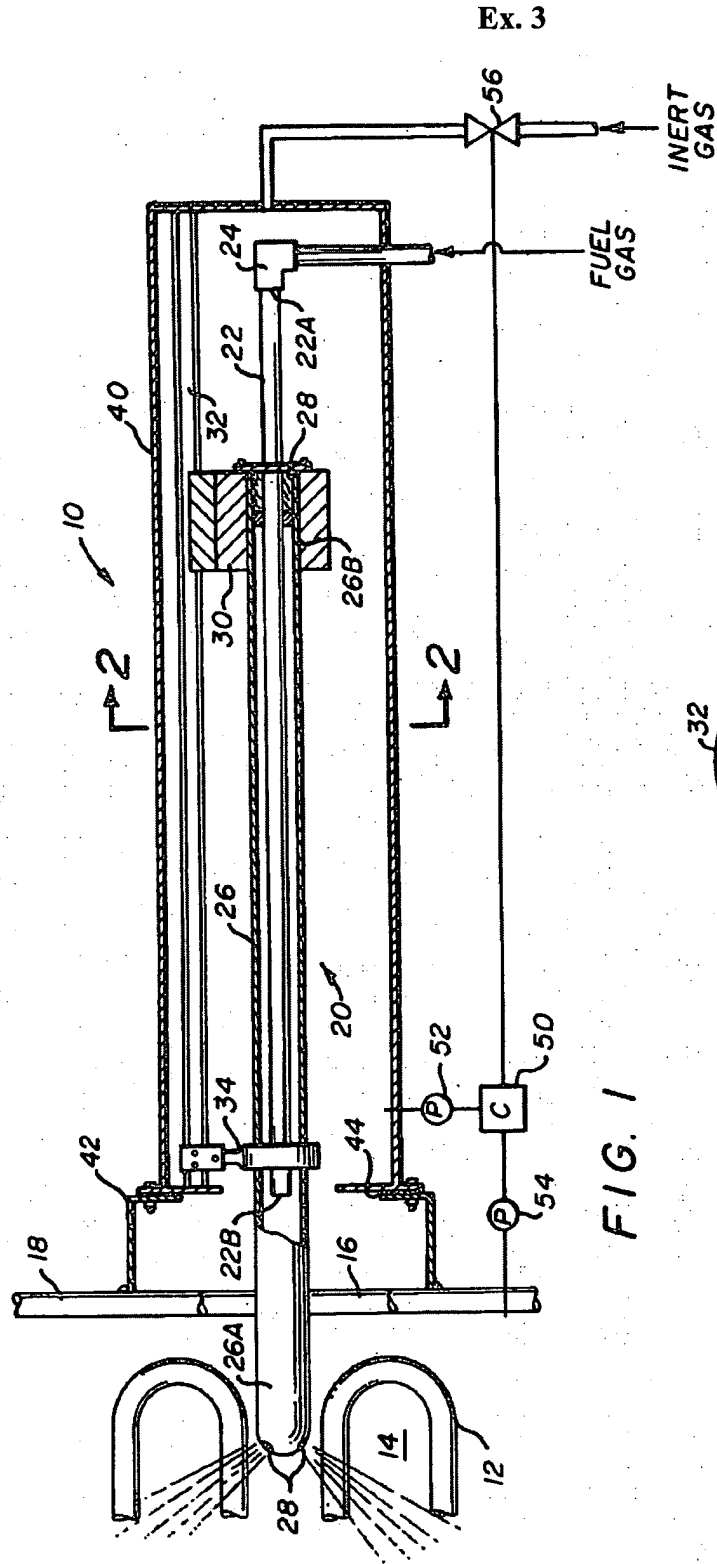
Ex. 2

[Drawing 1]



[Drawing 2]







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**Related Proceedings Appendix**

None